

THE  
**SOUTHERN AGRICULTURIST.**

MARCH, 1829.

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**PART I.**

ORIGINAL CORRESPONDENCE.

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**ART. I.—***Interesting Letters, on the Cultivation of Sugar.*

OBSERVATIONS BY THE EDITOR.

THE Sugar Cane is henceforward to be a staple crop of South-Carolina.

Convinced of this, we think we cannot render a more acceptable service to our readers, than by furnishing them with additional, and yet more conclusive evidence of the certainty of the crop, of the ease of planting and preparing it, and of the many advantages to be derived by every individual, and by the whole Southern country, wherever the cultivation of it can be adopted *in conjunction with some other crop.*

Whatever was necessary to satisfy the most cautious and incredulous, as to the possibility of cultivating this invaluable plant, could have been found, it seemed to us, in Mr. Spalding's various communications already given through this work, and which every Southern planter ought to read with deep attention. But, as if something was yet wanting to spur the indolent on to exertion, or to awaken the timid into enterprize, the success of Captain Stockton, (communicated page 101) is given to them, and will rouse them if they are to be roused at all.

Captain Stockton, very little more than twelve months since, commenced his operations without experience or knowledge of the Sugar culture, on land in a state of nature, but, like a man of sense, he was not afraid to own his ignorance of what was new to him; he applied to Mr. Spalding, who is *an enemy to secrets*, and found all he wanted. From these lands, planted with Canes, got from a distance with difficulty, and late in the season, he has made fifteen hundred pounds of Sugar to the acre, the beauty of which surprised and delighted us: *besides, we presume*, Molasses in fair proportion, and of as superior quality as the Sugar. So much for the success of one individual, notwithstanding many disadvantages. Let us judge of the success of others by the general impression, in favour of this crop, further south.

Between Darien on the Altamaha, Milledgeville on the Oconee, and Macon on the Ocmulgee, there are at this time more than one hundred plantations upon which the Sugar Cane is grown, and Sugar manufactured in more or less quantity. On the Savannah river also, there will be one hundred plantations, this present year, on which Cane will be grown in greater or less degree. All doubts as to the importance and value of the Sugar Cane *in Georgia*, have now passed away, while we in South-Carolina are just awakening from our slumbers, and beginning to think upon this important culture.

Let our readers apply again and again to the mine of information contained in Mr. Spalding's invaluable communications. Let them compare these with Mr. E. Barnwell's spirited letter, (vol. i. p. 485) and they will find the confirmation by one of our own state, who went expressly to the various Sugar plantations in Georgia, to see and judge for himself. Let them peruse Mr. Couper's judicious letter, laid before them this month, and reflect upon his excellent and useful remarks, intended for small planters. Let them finally inquire in Charleston, and they will learn that the Sugar Cane grows in its neighbourhood to full size, and if aught is wanting in its growth or quality, that early planting—planting in October, can supply the deficiency.

Is it not clear to every one, that the whole sea coast of South-Carolina, for fifty miles back at least, can enter boldly into the cultivation of the Sugar Cane as fast as they can procure seed?—Would it not be right, in the more

inland parts, to give it a fair trial also, as soon as practicable: even high up the country in warm, *rich* spots and valleys?

In the experiments which have been made hitherto in our own state, the Seed Canes have often been defective, and generally planted too late in the Spring. This we know was our own case in 1817, on tide lands on Combahee.

Let us now trace some of the advantages of planting this new crop in conjunction with some other—as for example, with Cotton.

The first advantage, and that a decided one, is giving us a most saleable article—*already subject to the influence of the tariff policy in its favour*, in aid of our languid and oppressed great staple of the south.

The second is, that this crop is safer than any we could find, within the whole range of those deserving our notice.

The third is, that the harvest arrives at a time when the planter's attention can be fully given to his plantation affairs, with safety to himself and family.

The fourth is, that in the field, and until converted into Sugar, it cannot be plundered! In this it has an advantage over Rice, Corn, Potatoes, and, in fact, every other crop.

Mr. Spalding states that the best Cane he ever had, *was planted in October*; but the crop may be put in the ground as late as the beginning of March. If planted early, and from the mildness of the weather, the plants shoot out, no injury arises. They may be cut down by frost a dozen times, without the smallest injury to their ultimate growth. These observations are made after an experience of twenty years in Georgia. Mr. Barnwell confirms this for Carolina, and states that his own Canes felt the frost of April last, in a way precisely similar to those on the Altamaha, *but no more*. Mr. Couper's observations, with regard to the effect of early frosts in the Fall, must place the minds of all our readers, who wish to adopt this culture, perfectly at rest. Even after frost, if another crop requires immediate care, as for instance, picking in Sea-Island Cotton, the Canes can be laid in mattresses, and in that state will keep during Winter, producing nearly as much as ever.

We call the particular attention of our readers to that part of Mr. Spalding's letter, (pages 58 and 59 of our last number.) He there gives the most substantial reasons why we should limit the quantity of land cultivated in Sugar, to two acres to the hand, and combine its culture

with a proportionate crop of Cotton, Rice, Indigo, or something else.

We shall sincerely rejoice at the introduction of Sugar, as a crop in South-Carolina, for many reasons, but especially because we think it will bring with it a new and better system of operations on many plantations. On the score of general comfort, a Sugar plantation is necessarily a place of plenty, compared with one on which Cotton alone is raised. The heavy crop to be brought home to the settlement, requires numerous and powerful teams. If ploughs are run, and animal power is employed to crush the Cane, yet more are necessary, and no doubt oxen will be chiefly used. These will be accustomed to the pen, and will be well fed, for every thing gets fat during crop time. Abundance of manure will be the consequence of this, with the aid of the refuse Canes, Blades, &c; and fat Beef, Mutton and Pork, will follow in the train.

What a change from the starved Cotton plantations, raising little or no provisions, of course saving no fodder; without Cattle, excepting wild as deer in the woods, and where even chickens are purchased for money.

The wants of a planter cultivating one half Sugar, the other half Cotton, would be but few, if with this new æra in our agricultural affairs, our planters will again introduce the good old custom of raising all their domestic supplies on their plantations, their fat cattle, fat sheep, hogs, and poultry. We shall then hear less of ill consequences from the tariff, and see again every where the truly independent Southern gentleman. For, when all wants are thus supplied, the money raised from the market crop, can then be added to the capital or productive estate, instead of being frittered away in paying the current expenses of the day, as is too much the case at present.

J. G.

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“ Darien, December 31, 1828. ”

*My Dear Sir,*—My friend Mr. Bell is going on to Charleston, and will exhibit to you some specimens of Sugar; the parcel marked first-week, was made without the application of Major M’Intosh’s means; the other specimens from second to fifth week, were made by the



employment of one pint of clay to one hundred gallons of juice, with the same quantity of lime, for settling the *foecula*; I think you will agree with me, that for size and firmness of grain, for brilliancy and beauty of appearance, it is not equalled by any raw Sugar from any quarter. I suppose you are aware that to make Sugar purely white in refining houses, refiners have always been obliged to wash the chrystals white by the percolation of water, from wet clays, wet sands, or wet cloths; the Sugar I send you therefore is as white as it can be made from the pan. Mr. Howard, in England, has made a great discovery in Sugar refining: it appears to consist in dissolving the raw Sugars in very pure and very soft water, and then evaporating the water in *vacuo*, in a temperature under seventy degrees; the evaporation being carried on in this low temperature preserves the chrystals perfectly white, and free from all colour, from either the pan or the fire. I have caused two inquiries to be made in England, the one direct from Mr. Howard, the other from his agent at Liverpool, from both the answer has been the same, the expense of the apparatus is so great as to preclude its application to the manufacturing of raw Sugars in the first place.

Captain Stockton, has sent me a specimen of his Sugar, with the enclosed letter accompanying it, both of which I place at your disposal.\* It is very little more than twelve months since Captain Stockton commenced his operations in the woods, without experience on his part, and without knowledge of any kind on the part of his servants. Every movement *to his end*, was accompanied

\* We cannot keep back Captain Stockton's letter to Mr. Spalding, alike honourable to both these gentlemen. It is as follows:—

“ Green Creek, January 3, 1829.

*Dear Sir*,—All your fellow-citizens, are, in common with myself, much indebted to you for the information which you have communicated from time to time to the public, on the subject of the cultivation of the Sugar Cane. But, besides, I feel that I owe more to you for the information which I possess on that subject than to any other individual. I therefore send to you, by the first opportunity, samples of the Sugar which has been manufactured on my Plantation. I take this opportunity to express to you my sincere thanks for the kind interest which you have manifested in regard to my success.

I remain, dear sir, with sentiments of great respect,

Your obedient servant,

R. Z. STOCKTON.”

“To THOMAS SPALDING, Esq.”

with accumulated expense. He had to buy his Cane seed late in the season, at a distance from his plantation, and to transport it, by vessels, the freight of which was more than even the cost of the Cane; but, with the frankness of his disposition, he sought for information, which, with the energy of his habits, and education, he carried into operation. The result is, that lands that twelve months since were in timber, have produced him more than fifteen hundred weight of Sugar per acre; of a quality, that cannot be surpassed by any Sugar, either in the West-Indies or Louisiana. You will be astonished at the extreme whiteness of Captain Stockton's Sugar, it arises from the rapidity with which it was boiled. His apparatus was efficient, and good, both in grinding and boiling; and as I wrote you before, fire is the discolouring principle, upon raw Sugars; and to make white, or light coloured Sugars, the juice should be the shortest time possible, under the influence of fire: add to this, the Cane-juice upon his new land, this dry season, was peculiarly fine, standing as I have heard at  $10\frac{1}{2}$  of the hydrometer. Howard, in refining his Sugar, therefore, in vacuo, makes his chrystals purely white, without any extraneous means. I will here close my communications to you upon Sugar, for I feel that enough has been written, and done, to satisfy the most doubting, as to climate and soils, as to planting and to cultivation, as to manufacture and to profit. And our Southern Atlantic States, may now boast of having added another staple, of high value, to the productions of their soil, by their own labour, and without aid from the Government, or rather in despite of her unfriendly influences; for the duty upon Sugar, was a duty of revenue, older by far, than the growth of Sugar, and which our Northern brethren, in their beneficence, have been long carping at; but what would our Wool growers say, if Congress gave a drawback, upon all Woollens, manufactured from foreign Wool, of almost double the duty of importation, upon the raw material. But in truth, and in fact, if agriculture has not already been strangled in the swaddling clothes of legislation, it is only, because her constitution was fashioned, and had taken its tone, in better times, and under better men.

Your's with regard,  
T. SPALDING.

TO J. D. LEGARE, ESQ.

"St. Simons' Island, January 18, 1829.

Dear Sir,—I have to apologize for not sooner replying to your esteemed letter of the 10th ult. It would be presumption in me to say much about the culture of the Sugar Cane, as I have had no practical experience: and know you are in correspondence with Mr. Spalding, to whose laudable perseverance, and intelligence, we are solely indebted for the culture of the Sugar Cane in Georgia. I have, however, been an attentive observer of its progress; leaving those gentlemen, who are now largely and successfully engaged in making Sugar, to communicate their experience, which I am sure they will do, *pro bono publico*. I will endeavour to furnish a few hints that may encourage small planters, (like myself) to plant part of their crop in Sugar Cane.

About fifteen years ago, I had a Sugar Mill, with live-oak rollers,\* made under the inspection, of a West-India planter: the losses I sustained by the war, prevented my proceeding with Sugar culture. The mill lay under shelter, unnoticed, until last fall, when my son, J. H. Couper, had eight or nine acres of Cane more than he wanted for seed, and put up this mill, in the open air, with a temporary log-house, for boiling and curing, having therein three boilers, belonging to more extensive works, in which he is engaged for next season. This mill produced one hundred gallons of juice per hour, with a couple yoke of very small oxen, to which the draught appeared easy: a pair of mules or horses would probably give one hundred and fifty gallons, which, with four boilers from two hundred gallons downward, would manufacture half an acre of Cane, between day-light, and ten o'clock at night. Such a mill, boilers, house, bricks, and the expense of hanging the boilers, would cost under five or six hundred dollars. It is not my object to state the proceeds of this patch of Cane, but believe fifteen hundred weight Sugar, and eighty gallons Molasses were made: the Canes were of the ribbon kind, which are rather hard for such a mill. I saw some bundles carefully weigh-

\* We beg Mr. Couper will favour us with a draft of this Mill, with its dimensions, and especially the length of the arm or lever to which the houses are attached. If a sketch of the manner in which the Buildings on a small Sugar plantation are placed, were sent us by some of our correspondents, it would be useful to the general run of our readers.

ed—the produce, two thirds juice and one third trash.—More effective iron rollers would have done better.

I shall now make some desultory remarks, that may encourage the culture of the Cane farther North and West, than what has generally been supposed the climate would permit. The great objection to the culture of Sugar, has always been the shortness of *crop time*; for there is no doubt that the Cane comes to perfection, at least along the whole seaboard of Carolina and Georgia, and perhaps farther West, then we imagine. Cane planted thick, particularly Ribbon Cane, forms so dense a mass of leaves, that it takes a smart frost to singe more than the tops. The Cane may be cut down *even* after the germ or bud has been killed by frost, and thrown into heaps in the field, (called mattresses,) and will keep during winter, producing *nearly* as much as ever. I know of two experiments made, by different persons, in different years, with Cane matted six weeks, both yielded well. They may be thus preserved much longer.

Our best Cane lands will be our inland swamps, where they can be kept dry in the fall of the year. I have seen several acres of very fine luxuriant Cane, on a piece of *loblolly bay swamp*, that had been repeatedly tried in Cotton, Corn, and Potatoes, without success. An acre of good Canes trimmed for the mill, will weigh about thirty tons. Ox carts are therefore requisite to bring the Cane to the mill. The Ribbon Cane, though more difficult to grind, and producing less than the *Otaheite*, is nevertheless so much hardier and earlier, that it will obtain the preference.

The last season has been particularly favourable for Canes, and the result must not be calculated on. But in tolerable soil, I have no doubt that 1000 weight of Sugar, and 50 gallons Molasses per acre may be considered as a moderate average.

Our sea shore light Cotton lands, produce superior Sugar, but less in quantity, (particularly in dry seasons.) Few plants are more susceptible of manure, than the Cane, and our light lands well manured, will produce well.

If the foregoing remarks, are worthy of your notice, you may insert them in your Agriculturist.

I am, very respectfully, dear sir,

Your most obedient servant,

JOHN COUPER.

To J. D. LEGARE, Esq.



ART. II.—*On the Cultivation and Preparation of Indigo;*  
by General FLOYD, of Georgia.

OBSERVATIONS BY THE EDITOR.

We are enabled, by the kindness of our zealous and truly patriotic correspondent, Thomas Spalding, Esquire, to lay before our readers the following instructions on the cultivation of Indigo, as practised in Georgia, by the old Indigo planters. They are from the pen of Gen. Floyd, who is the last gentleman who cultivated it extensively in our sister State. We feel so assured that this able paper will be found completely to supply all that is wanting to restore this culture to the Southern States, that we confidently recommend it to those who would plant "*The Weed.*"

It is a crop that will pay well, we are satisfied, in these times, if *the quality is attended to*, and therefore highly deserving the notice of all Southern planters. Mr. Spalding thinks it could be combined to advantage with a Sugar crop, and as the first gathering ought to commence the latter end of June or beginning of July, and as, in case of necessity, the system of preparing *the dry leaf*, can be resorted to, (see page 475, vol. i.) there can be no doubt he is correct.

We shall only give at present the mode of preparing the land, the method of planting and tending the crop, reserving for a future number, the interesting description of the preparation of the dye: the mode of conducting which, is so complete, that no one of common intelligence will find a difficulty in a process so simple. In addition to this able paper from Georgia, we have received from Governor Williams, of our own State, what we have long inquired for, and hunted after in vain, "*Instructions for the preparation of the same plant as practised in Bengal,*" communicated to him by an Indigo planter, who realized a fortune there, by planting and manufacturing the very superior quality of dye, imported from thence. This interesting article shall be laid before our readers immediately after Gen. Floyd's instructions are completed.

N. B. We had noticed Mr. Spalding's observations, (p. 484, vol. i.) that from his recollections the culture of Indigo

did not appear to him to be an unhealthy one, and we would confirm this as far as we can judge from a perusal of the instructions: provided drains are made to carry to a distance, the useless liquor discharged daily from the beater. If this is allowed to accumulate and form ponds or puddles, pestilence will surely follow.

J. G.

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### *Cultivation of Indigo.*

Lands the best adapted to the culture of Corn, Cotton, or Upland Sugar Cane, are considered as being equally suited to the growth of the Indigo Weed, from which the dye is produced.

The preparation of the land, the sowing, and early hoeings, will be found more tedious, and require more care, than any other article of general cultivation. It will be readily perceived, that from seed, so small, and the pulp so strongly enveloped by a hard crest, that care in planting and favourable seasons are material to its germination, and early growth. It is necessary therefore, that the land should be well broken, levelled, and raked, to free it from stubble or trash of any kind, previous to forming the beds, on which the Indigo seed is to be planted. These beds are usually made from eight feet eight inches to ten feet six inches wide, giving from ten to twelve beds to the task, as the fancy of the planter, or the situation of the land, may dictate. The space between the beds, need be no more than to form the beds, and afford a receptacle for the grass, &c., taken from the plant, and to draw from it also the water produced by much rain.

The earth taken from the space between the beds,\* should be thrown towards the middle, so as when adjusted, to afford a little descent towards the ditches, in order to prevent water from lodging about the plants.

### *Method of Planting.*

Trench the beds across, about the distance apart observed in Rice, and the seed drilled and covered, as you would

\* These alleys to be about twelve inches wide and shallow. [We would suggest two feet as not too much for the width.—*Ed. So. Ag.*]

Turnips, Flax, or Wheat, allowing one quart of seed to the task, or one bushel to eight acres.

The time for planting about the same as Cotton in similar situations, as to soil and seasons; which should be considered, with a view to establish with the greatest certainty the vegetation and early growth of a weed produced from seed so small, and of so hard a texture, as to require the aid of moisture to bring it up. Remembering at the same time, its susceptibility to the effects of frost.

Two trenchers, one sower, and two coverers, (*with rakes or boards handled*) will plant two acres per day. A hand will tend five acres of land. Every five hands will require one set of vats; which will be described hereafter; of these five hands, two should be able bodied men, for the purpose of reaping, pumping, beating, and handling the weed, *or dye*, in its crude state.

In the cultivation of Indigo, much depends on the fertility and preparation of the soil, as well as on favourable seasons, and the quality, or age of the seed: in getting the crop well set; afterwards the *care*, with which the early weedings are attended, (as but little can be done with the hoe) in freeing plants so small, from young or small grass, which is important to promote the growth of the weed: for the product depends much on the early commencement of manufacturing the dye from *the weed*—because early cutting will give reasonable calculations on the second, and perhaps a third cutting, from new growths from the stubble, if the winter or frost happens to be late in its effects on vegetable matter. After the weed gets to be four or five inches high, there is but little trouble in tending it, for as the roots penetrate as far below the surface, as the stalk rises above it, it will then bear the drought. The grass, (by the time it acquires that height,) will be easily kept under with the hoe, no bedding or thinning being required. If the seasons and soil promote the growth of the weed, it will be fit for cutting about the last of June, or beginning of July. When the weed arrives at maturity, or in other words, is fit for reaping, the leaves become thicker than in the growing state, lose their pliability, and will break by doubling them together; at this period they are supposed to contain all that they are capable of yielding of the dyeing matter. It is therefore necessary to commence cutting on the approach to this state, which the plant does not retain

long before the leaves begin to lose their fullness, and are apt to fall from the stalk. One of the perplexing evils incident to it, and much hastened by the extremes of dry or wet weather, particularly the last. *For these reasons the planting should be so arranged, as to enable you to cut it in the same progression with the order of its age.*

One task, or one fourth of an acre of good weed, will fill a vat of twelve feet square by thirty inches deep. *Provided you do not plant provisions,\** you will plant twenty-five acres for every set of vats. And supposing your weed will, upon the average, give six vats to every two acres, (which is a more safe calculation) you will then require three months to get through the first and second cuttings. Each vat should produce from twenty to thirty weight of merchantable dye, which however, depends in a great measure on the congeniality of soil, water, skill and management.

(To be continued.)

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### ART. III.—On propagating the Sweet Potatoe from Sprouts.

“Richmond County, Geo. Jan. 24, 1829.

Dear Sir,—I have been a subscriber to the *Southern Agriculturist*, from its first commencement, and have felt deep interest in its success for the benefit of the South, as also for my own advantage. I am confident there is but one thing that prevents its becoming superior to any publication of the kind to the Southern planter, and that is the

\* It was formerly the custom, to plant three and a half or four acres of Indigo, and one, or one and a half acres of provisions to the hand; by this rule, five hands (*the necessary gang to each set of vats*) will plant from seventeen and a half to twenty acres. For example, suppose four acres to the hand, and allow three vats of weed to the acre, will give to twenty acres, sixty vats, each producing twenty pounds of merchantable dye; this will yield from the first cutting twelve hundred weight, and to each hand two hundred and forty. Without trespassing on the Sabbath, you can make but five vats per week, twenty per month, and of course it will require three months to get through the first cutting: which brings you to that season of the year, less congenial to the manufactory of the article; consequently the quality of the after cuttings are seldom as good, as that of the first; but their product, ought to be sufficient to cover all expenses. I consider this, a safe calculation with ordinary chances.



backwardness men have in writing for publication ; they think it necessary to unite something superior, or it will not do to be seen in print, forgetting it is the information we want, and not the beauty of fine pieces. For my own part, I have had a good will to lend a helping hand to this paper, but I confess I have been governed too much by this thing, as no doubt many others have been. I shall no longer keep silent, and I hope *all* readers will contribute something for the general good. There is no planter but what has some hobby, and he certainly can tell us of it—there is no planter or farmer but what can give his neighbour some useful information or other, and the *Southern Agriculturist* is a very fit vehicle for circulating such information. I feel very much indebted to Mr. Blackledge, for the information given us in the January Number for 1829, as it will be of great value to me ; hitherto my Greengage Plumb, my Apricot and Pear, have failed bearing in consequence of an insect or worm that feeds on the inner bark of the tree, and which I hope now to destroy. I will answer "*A Constant Reader's*" query, and though it may not benefit Mr. "B." (yet I hope it will) it may many others, and particularly the querist.

In all the month of February, on a rich piece of land, make beds two feet wide, at top, (or what is best, prepare hot beds,) open two furrows on each ridge or bed, take your large Potatoes, and split them, laying the split side downwards, the middling size Potatoes plant whole, plant the Potatoes nearly touching each other in the furrow, and cover them about three inches deep, by this means you will have fine draws for planting out, by the last of April, and in May, when we *sometimes* have fine showers ; the sprouts are best when planted before they commence to vine—they are to be drawn and set out as you do Cabbage plants, they do not positively require, as was formerly supposed, a wet season to set them out in—a tolerable season will do, and I have known them to grow after a very slight shower—vines are much more difficult to grow than sprouts.

Potatoes raised after this manner are larger, and more abundant than any other way, and *all descriptions of the Sweet Potatoe* are best from the sprouts. I would advise half the land you intend to plant, to be planted with the "Potatoe planting," the other part in sprouts, and a small

part in vines, for next year's "planting." I advise this as we cannot get rain always when we want it, and to manage our whole crop in sprouts would be difficult.

TYRO.

To J. D. LEGARE, ESQ.

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*Note, by the EDITOR.*

We shall be obliged to any of our readers or correspondents who have practised the mode of raising the Sweet Potatoe from Sprouts, mentioned by our correspondent *Tyro*, to give us further information on this subject.

We have not a more valuable esculent than this common root, or one that contributes more largely to the comfort of our labourers, to their children's, or, in fact, to that of our own children, than the Sweet Potatoe. For the support of our stock, it is invaluable. Every method, therefore, of increasing its productiveness, and especially of bringing it in earlier in the season, is of great importance, and we intreat all our readers and correspondents to assist in the *improvement of the old*, as well as the introduction of new crops.

Why would it be more difficult to manage a whole crop as *sprouts*? We presume principally because the planting is more tedious. If this is the case, would it not be of advantage to introduce the mode followed in the west of England in planting out field Cabbages? *That* is as follows:—

"Instead of a dibble, a *mattock* is used in making the holes. The broad end, or back part of the tool is struck down into the soil, eight or nine inches deep, more or less, according to the size of the plants; the handle being pressed downwards so as to form a vacancy behind the blade. The roots of the plant are inserted in it, and the tool carefully withdrawn, without ruffling the fibres of the root. The plant is then raised into an upright posture, and the soil is pressed with the foot, in order to bed the fibres close to the plant. The plants are carried by a boy, who puts a single plant into the man's hand, at the instant he is ready to insert it. The man keeps his eye constantly upon his work. One man plants a quarter of an acre a day, thus inserting twelve hundred plants, three feet apart, without extraordinary exertion."

J. G.

ART. IV.—*Extract from an Address, delivered before the United Agricultural Society of South-Carolina, in the Hall of the House of Representatives, on the 1st of December, 1828; by the Hon. WHITEMARSH B. SEABROOK, President of the same.\**

“Whether it is to be ascribed to his isolated situation, and its attendant peculiarities, or to the influence of education, it is unquestionable, that the planter is governed generally by strong, and oft-times unconquerable prejudices. In his limited intercourse with society, his actions betray the ascendancy of a deceptive self-love, and even among his associates, there is discernable a settled conviction of mind, that his pursuit is independent of the aid of his fellow-man. Practically denying the existence of elementary principles in agriculture, and rarely guided by any other monitor than the biddings of experience, he, seemingly, believes that scientific inquiries are uncalled for by the legitimate wants of his profession. The cultivation of the earth and the unbroken routine of a yeoman’s duty, appear to him so simple, and to be confined within so narrow a compass, that he readily adopts the opinion of Xenophon, pronounced in a rude and barbarous age, that agriculture is the easiest of all the arts. Under the influence of this unfortunate feeling, even schemes avowedly to further his interests are viewed with distrust, and as typical of that vexatious interference which emanates from the arrogant and the opinionative. To these considerations is to be traced the popular belief, that georgical writers are almost necessarily, unsuccessful farmers: and to the same source is referable the unfavourable estimation in which the experimentalist is held. So great and extensive, indeed, is the delusion on this subject, that the very ingenuity, or novelty of the doctrines of the theorist, is alone sufficient indelibly to stamp his reputation with the signet of the unsuccessful planter: and, in reference to experiments, which, when directed by reason, is one of the infallible means by which a knowledge of the rural art is acquired, he who tries them must be prepared to encounter the jests,

\* This is the second Address, of that Gentleman, before that Society, at which time we understand he resigned the office of President; and Colonel THOMAS PINCKNEY, of Pendleton, was elected.—*Ed. So. Ag.*

if not the ridicule of his neighbours, should disappointment be the result of his efforts.

“But these are not the only instances in which a planter unwittingly undervalues his vocation. Controlled by the belief that his mental powers are of but slight avail in the accomplishment of his ends, he is irresistibly led to infer, that it is exclusively the scholar’s duty to indite for public instruction. Whenever induced, therefore, to transcend the limits in which he has been accustomed to move so far as openly to record his sentiments, it is done with the averseness and reserve of a conscious intruder. Falsely imagining, that like the accomplished academician, his communications should be drafted with classical purity and logical precision; he, at the same time, discovers his ignorance of the historical truth, that the prosaic pen of the farmer, in its occasional exhibitions of important agricultural facts, has been of more utility to society, than the mere scholar has ever effected in his volume of well-turned periods, decorated in all the pomp of rhetorical embellishment.

The division of labour was the result of necessity, and in its principles as practically exemplified in the diversified engagements of mankind; we behold one among the numberless instances of the munificence of the creator. The planter, therefore, should reflect with gratitude, that although the nature of his calling may be pronounced adverse to the maturity of his intellect, yet, that in his profession, we see the first and the most useful employment of man; and that in unfolding in his homely way, the secrets of his success, or in depicting the probable means of promoting the welfare of his art, he is, in effect, advancing the happiness of the human family. To the causes which impair the influence and detract from the dignity of husbandry in the conduct and anomalous notions of farmers themselves, the pride of learning and the slothfulness of our nature have added others, one of which, we are tauntingly told, is destined to maintain its operative agency, until time shall be no more. During the feudal ages, the ground was exclusively cultivated by the serfs and villeins. Over the former, who were identified with the soil, and transferable with it, the master exercised unlimited control. The latter paid to their masters a fixed rent—the surplus was their own. From the defects of the feudal policy, another class of people, who at first were freemen, but who could



never enjoy their property, surrendered their liberties, and became the voluntary slaves of some powerful lord or baron. At that period, those who tilled the land were of a degraded condition. From the low estimation in which they were held, it was easy to assimilate ideas of degradation with their calling. To this source, I apprehend, is to be sought the origin of that uncourteous feeling—that contumelious ascendancy of character—in fine, that presumptuous authority, which every beardless cit or tyro in the sciences is wont even now-a-days to manifest towards the husbandman. Aware that three fourths of the civilized world are rustic labourers, and that education has not yet embraced in its animating sphere a majority of mankind, they deduce the inference, that the boorishness and stupidity of the ancient serf are still distinctly visible in the modern yeoman; and that as agriculture thus negatively derogates from the elevated rank which man was destined to occupy, its operations should be confined to those whose minds, by nature or art, are on a level with the humility of the occupation. When, therefore, the poet or the historian, the statesman or the philosopher, condescends to laud the rural art, personal service to the plough is not the tribute which he would be willing to pay for its enjoyments. The effects of manual labour, and not manual labour itself, constitute the *tout ensemble* of his graphic sketches. The moral, benign and patriotic tendency of husbandry is but the operation of a cause incorporated with the very elements of its nature. Yet, is it not strange, that the display of some of the cardinal virtues in the person of the farmer should ever excite the wonder, or call forth the incredulity of the world. Had Curius occupied, in common parlance, a higher grade in society; if Paulding, Williams, and Vanvert, had not been mere tillers of the earth, the story of their achievements would have been deprived of its value and interest. Hence, in allusion to the incidents adverted to, and others of similar *caste* we are surprised that the power of gold and love for distinction, should not have successfully assailed the one, and triumphed over the other.

Having thus cursorily drawn your attention to the origin and progress of those feelings, which, from their universality, have seriously impeded the progress of agriculture, I would, in allusion thereto, unhesitatingly assert, that no single

circumstance has ever exercised a more pernicious sway over the destiny of any avocation in life. Confined to no climate or country—operating alike under the sway of despotism as in governments the most free, the same cause, like a mighty incubus have pressed heavily on the bosom of society. Even in this enlightened age, and in our own republic, where reason is free to combat error, the labour of the husbandman is but the destined victim for a general sacrifice. Fellow-citizens ! this state of things should no longer endure. The dignity, the interest, the pride, the power of the profession, should be appealed to. And here I would remark the unconsoling truth, that whenever the agricultural community are urged by necessity or considerations of policy to unite their talent and experience, that the call is not unfrequently promptly obeyed ; that the schemes which may then be formed, will commence with the usual indications of success ; prosecuted for a time with ardour ; but soon it will be manifest that their zeal is as evanescent as their prejudices are inflexible. In a sparse population this unnatural dereliction of duty will be more particularly observed. In the Eastern and Northern sections of our country, agricultural associations have been more successful than in the Southern States. There, the farms are necessarily small—the circumstances of their owners less unequal—the population more dense ; and hence, in proportion to the facility of frequent interchange of thought, and to the absence of that overweening, aristocratic pride, usually incident to wealth, will be the freedom and expansion of the mind, and its exemption from the bias which impair the usefulness of its acts. Concentration of opinion, when supported by the ability to execute, is an engine of tremendous power. It can accomplish in a day what insulated efforts could never hope to attain. But union to be useful or permanent, can only exist among men who duly estimate their duties, and who believe that they are in honour bound most sacredly to fulfil them. From the remarks which have been submitted, it will be perceived, that I aim at a more close and perfect connexion among the agriculturists of this State. With a view to the attainment of so desirable an object, which, when effected, will be perhaps the commencement of a moral revolution highly advantageous to the cause we advocate, I would advise the immediate establishment of parish or district societies, each

of which should be represented in the general Society. Let every member of the union annually present to the delegates assembled, a detailed account of the state of agriculture in the parish or district which it represents; the improvements effected; the most usual as well as successful methods of manuring; its botanical, geographical, and mineralogical treasures; the number and condition of its stock, and further, whatever facts or suggestions are calculated to develop the actual and available resources of the State. The presentation of each report, if in strict conformity to the rule which may be established, to be followed by an ample requital in the form of a premium, on the part of the general society, of such a value and character, as will be most likely to perpetuate the design to which it owed its birth. The effectuation of this scheme, will depend primarily on the patriotism and munificence of the Legislature; and when I reflect that South-Carolina is emphatically an agricultural State, and that the perpetuity of her domestic altars is inseparable from the preservation of the rights of her landed proprietors, I am satisfied that I shall not appeal in vain, when I ask the deputed guardians of an oppressed community for their patronage and support. As a collateral but powerful means in the accomplishment of your purpose, I would further recommend the propriety of again claiming the notice of the constituted authorities at some future period to the establishment of a Professorship of Agriculture in the South-Carolina College. This subject I introduced to your view in my opening address, and I would, at this time, only remark, that to our youth, every avenue to science should be opened; that they should be taught the elementary principles of any profession their dispositions may incline them to pursue; and that every consideration of duty, of interest, and of patriotism, invite us to ingraft geonicks on the system of collegiate instruction.

(To be continued.)

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*Note, by the EDITOR.*

It was our intention to have pressed upon our readers' notice the necessity of establishing Agricultural Societies throughout the whole Southern States, than which, nothing

can be of greater importance to our agricultural interests, to our political rights, and to our internal security.

Mr. Seabrook has, in the preceding extract, with which he has permitted us to enrich our work, so well described the advantages to be drawn from these associations, that we can add but little to the subject. We however think, that wherever they are established, they ought to embrace in their constitution some of the objects of the South-Carolina Association, that is, some attention to the state of regularity or general conduct of the negroes about them, thence to the manner in which the patroles are regulated or neglected, and other district or parish business affecting this essential point.

A public body, composed of the planters of a district, would carry great weight with it in all such matters, and would, if well directed, make itself heard and felt with advantage to the community.

We hope therefore, that where no associations of this kind exist, that they will be set on foot, and where they have been discontinued, that their meetings will be resumed. One other observation with regard to them, we shall with great deference make, and it is this: many men, who could add to their interest, are prevented from joining them by the heavy annual contributions. Where usefulness is the object, it is desirable above all things, that the members should be as numerous as possible, and numbers can only be attracted by the utility of a measure, and by very moderate call on the purse.

J. G.

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ART. V.—*On the Cultivation of Fine Cotton; by WM. ELLIOTT, Esq.*

“Beaufort, 17th February, 1829.

*Dear Sir,*—In a communication which I sent you a twelvemonth ago, on the culture and preparation of Sea-Island Cottons, I indulged in some speculations, as to the causes of that *difference of staple* which gave so remarkable a superiority to the product of one planter over another, and which discovered itself in the Cottons even of adjoining fields.



In that essay I remarked, that in raying off, and rejecting the *coated seed*, and selecting the clear, black seed, as had been the practice of the parish, we had probably committed some error; since the finest specimens of Cotton I had ever seen, were the product of the coated seed. Soon afterwards there appeared in your Journal, the essays of "*An Enemy of Secrets*," who, dividing the different seeds into six classes, and minutely determining the scale of fineness and productiveness of each, and enjoining the proportions in which they should be mixed to *produce profit* and *prevent degeneracy*—namely, one quart of brown seed tipped with brown down, with thirty-one quarts of black seed tipped with green down—seemed by the very impracticability of his recommendation to cast an air of burlesque and ridicule over the whole project of selecting seed for a crop. What planter was so devoted to his pursuits—had made such close examination—had instituted such minute and various experiments—was possessed in short of such ample and unerring experience, as to authorize him to pronounce peremptorily, on the productiveness and fineness of *every variety of Cotton*? Or, if his conclusions were admitted—how could the seed be procured of the required proportions? To ray off the coated seed from the clear black, might readily be done; but how separate the brown with brown coats, from the black with green? By no imaginable process except by one, which, from the amount of manual labour required for it, would be inapplicable to all extended planting operations? Having no clue by which to discover the author of the recommendation in question, I cannot determine whether it was given in jest or in earnest: but if in earnest, I am well assured that it would be useless, since no considerate planter would engage in a process so tedious, and (in respect of labour) so costly, unless it was sanctioned by the name of its author.

My object in this communication is to state to you my belief, I may say *my conviction*, that *the true secret of fine Cottons is in the selection of seed*, and that it is the knowledge of *this secret*, which has enabled some planters to double and triple the profits of the rest of the tribe! It is indeed the only satisfactory solution of the problem, so often remarked with surprise, that plantations of little value to their original owners, have, when transferred to the hands of the initiated, yielded such golden returns! But which

is the seed to be preferred? and how do I know the fact of its superiority? I answer it is the seed *with a tuft of pale yellow\**—its productiveness I cannot measure, (not having cultivated it separately) but of its superior fineness I am perfectly satisfied. I have indeed heard it surmised that the seed cultivated by a Planter of St. John's, Colleton, remarkable for the reputation of his Cotton, was entirely coated with green; but I neither know the fact, nor that the product of the *coated* is finer than that of the *tufted* seed. What I do know is this, that examining the Cotton before it is ginned, I have remarked that the fibre from the tufted is finer and more silky than that of the clear black seed, and that a friend of mine, who shrewdly suspected there was something more in the matter, than was published in newspapers, or in reports of Agricultural Societies, has, by selecting his seed for three years, *on this principle*, added 75 per cent. to the market value of his Cotton! This is sufficient for me; I rely on my own observation, and the authority of a planter of unquestionable veracity? But this may not be satisfactory to others; "You may be mistaken," they may say, "and the purchaser of your friend's Cotton may have been deceived as to its quality." The objection may be good; every one will judge for himself. I perform my duty when I state my own conviction and the reasons which sustain it: a conviction so sincere, that I mean to plant my entire crop, if practicable, of this selected seed, in the confident expectation of improving the fineness, and without fear of diminishing the quantity; not believing with the "*Enemy of Secrets*," that the productiveness must necessarily be in the inverse ratio of the fineness!

Suppose, Sir, that I have developed the true secret of the high-priced Cottons, what are likely to be the results?—Why, that the quantity of fine Cottons will be greatly increased, and that the value of Cotton lands will, in the first instance, be as greatly enhanced! For though the same favoured situations which, *without a selection of seed*, have heretofore produced fine Cottons, will continue to produce them; yet other fields not so favoured, (even those lying on the main land, if accessible to salt atmosphere,) may, by careful selection, produce fine Cottons likewise. But when this increased quantity of fine Cotton is brought into market,

\* The seed with a tuft of green is not easy to be separated from it, and may be nearly as fine.

will the high price now obtained for such descriptions continue to be realized! I think not. They who first succeed will reap the benefit, but in a few years, I apprehend that the finer qualities will bear the same rates only which are now borne by the common sorts; and these are my reasons: that the article in question is worked up in foreign manufactories only—that but a small quantity of *very fine* is *actually needed* for the commercial necessities of the world—and that the restrictions on trade, imposed by the rapacity of domestic monopolists, leaves us no hope of stimulating the languid foreign demand, by proffering a free exchange of commodities.

I confess, therefore, that I see no *permanent relief* to the Cotton Planter, but in a reduction of his culture, and the application of his labour to other objects; and I am gratified to perceive that the attention of the community is awakened to the necessity of directing our agricultural industry into new channels—that more perfect and healthful processes for the manufacture of Indigo are suggested—that the Sugar Cane is extending itself northwardly in Georgia, and promises shortly to take permanent root among the Sea-Islands of this vicinity. If, as suggested by Mr. Spalding, the growth of the Sweet Orange, indicates the granulating point of Sugar; the Cane will here find a congenial climate.

I remain, with sentiments of esteem,

Your obe't. serv't.

WM. ELLIOTT.

To J. D. LEGARE, Esq.

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ART. VI.—*On the Cultivation of the New-Zealand Spinage (Tetragonia expansa;)* by the EDITOR.

This is a most excellent vegetable, and will prove a valuable acquisition to us of the South, as it will supply our tables with an excellent and delicate dish, at a season of the year when the other varieties of the Spinage cannot be had, and when most vegetables are destroyed by the heat and drought, which usually occurs about mid-summer. It was

discovered on the Island of New-Zealand, by the naturalists who accompanied Capt. Cook, in his voyage round the world, and was introduced into England by Sir Joseph Banks, in 1772, where its nature was so far misunderstood, that for a length of time it was treated as a Green-house plant—it is now grown in the open ground by the gardeners of that country. In nothing does this plant resemble the common Spinage, except in flavour, and in this the similarity is very strong, with this addition, that the New-Zealand Spinage surpasses the other varieties in delicacy. Its branches are thick, strong and numerous, and proceed from the stem, (which rises but a few inches high,) in every direction, and grow to a considerable length, resting on the ground, with the ends a little elevated; the leaves are thick and succulent, alternately growing on short foot-stalks, on the branches, and at very short intervals: at the base of each is found one seed, (which, as soon as matured, drops,) and also the bud of another branch, which in a very short time pushes out and becomes a strong, bearing member.—The leaf, which is the only part that is used, must be carefully *pinched or cut off*, so as not to injure either the embryo shoot or seed; it is large and fleshy, and the under surface resembles the leaf of what is commonly known among us as the Ice Plant, being filled with aqueous tubercles. The seed is large, and when surrounded with its pericarp has rather a curious appearance, having several small hornlike projections at the flower end.

We imported some of the seed direct from London in 1827. It was planted late, and in land which was rather low in some parts, and it did not appear above ground until the 13th of April—about the middle of May it was fit for use. It grew very luxuriantly the greater part of the summer, and did not appear to be the least affected by either the heat or drought, which at one time was very severe, but continued to grow and yield most abundantly, until the almost unprecedented heavy falls of rain, which took place about the last of July and beginning of August. It was then literally scalded to death by the hot sun, accompanied as it was, by frequent showers; and this was the fate of most vegetables at that time. About the last of August, of the same year, we had the ground, previously occupied by these plants, ploughed up, and sown with *Ruta Baga Turnips*. Some little time after, walking over the



ground, we observed many plants of the New-Zealand Spinage; we selected a few, and suffered them to remain where they grew. Their growth was vigorous until vegetation was checked by the winter; they were not however killed, by any weather we had, and the only effect we observed that the frost had on the plants, was to destroy the ends of the branches, but the rest of the plant did not exhibit any signs of injury. It will be recollected by our readers, that the winter of 1827-8 was unusually mild; we had, however, throughout it, several black and white frosts, and every species of vegetation which is usually killed, was destroyed on the place where these plants grew; yet they lived throughout the winter, and although checked in their growth by its influence, with the return of mild weather, again resumed their luxuriant growth; and from these plants we continued to gather as much as was wanted for our use, without replanting in the spring.

But lest it should be thought that its surviving that winter was owing to its extreme mildness, or some accidental circumstance, we here state, that we this winter had it growing, and in full foliage, unchecked by any frost we had, until killed by the severe cold of January, which was sufficiently intense to destroy even the young branches of Orange trees; moreover, that neither during the last winter nor this, was it in any way sheltered or protected, but grew in the open ground, fully exposed to every vicissitude of the weather.

We have been particular in relating these circumstances, to show how far the gardeners of England erred in their first treatment of it; so far from being a tender plant, we find it hardier in its nature than most of the vegetables cultivated in our gardens.

It is rare for us to meet with a plant that can endure the great heat and drought of our summer, and also withstand such cold weather as destroys the Sweet Potatoe, Tomatoes, &c.: yet we find the New-Zealand Spinage enduring both, and yielding a plentiful supply, both early in the spring, throughout the principal part of the summer, and during the commencement of winter. Thus it appears that those who are fond of this species of vegetable, may enjoy it through a large portion of the season, and we believe that if a little *protection* alone be given it, it will survive most of our winters.

Its culture is very easy—we would recommend that it be planted as soon as there is an indication of the approach of spring, say about the last of February, or commencement of March; select for this purpose a piece of light rich soil, and plant the seeds two in a hill, at the distance of three or four feet each way. It grows very luxuriantly, and will more than cover that space in rich soil. One plant only need be left, and only a few hills planted, for so rapid is its growth, that a dozen plants will be amply sufficient for the supply of most tables, even if wanted every day. Those who may be pleased with it, and wish a successional crop for the autumn, we would advise to plant again about the last of August, and as it yields it seeds in great abundance, more can be planted, should the first fail; from excessive moisture, which appears to us to be the only casualty to be feared, at that season of the year. We request, however, that our readers will bear in mind, that we here intend merely to give a few hints to aid such as may wish to cultivate it, and do not give these directions as being the best adapted to our climate, for although we have had it for two years, yet being absent the whole of the last summer, we cannot state any thing respecting it during that time, of our own knowledge. Other courses of culture may hereafter be found to be more suitable to our latitude, and should this be the case, we will hereafter give such information, whether derived from our own observations or that of others.

J. D. L.

## PART II.

### SELECTIONS.

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ART. I.—*Outlines of Horticultural Chemistry :—Manures.*  
*By G. W. JOHNSON, Esq. of Great Totham, Essex.*

[FROM THE GARDENER'S MAGAZINE.]

(Continued from page 86.)

I shall now proceed to consider manures ; a class of bodies of the first importance to the cultivator of the soil, yet of the economy of which he is generally most ignorant, inasmuch as that their judicious employment requires considerable chemical acquirements. Every substance capable of increasing the fertility of a soil, when incorporated with it, is a manure ; hence, the earths, when applied to regulate its retentive powers, are actually manures. Manures are animal, vegetable, and mineral ; they *directly* assist the growth of plants, 1st, by entering into their composition ; 2dly, by absorbing and retaining moisture from the atmosphere ; 3dly, by absorbing the gases of the atmosphere ; 4thly, by stimulating the vascular system of the plants. Manures *approximately* assist vegetation : 1st, by killing predatory vermin and weeds ; 2dly, by promoting the decomposition of stubborn organic remains in the soil ; 3dly, by protecting incumbent plants from violent revolution of temperature.

All these properties seldom, if ever, occur in one species of manure, but each is usually particularised by possessing one or more in a superior degree. That is the most generally applicable manure that is composed of matters essential to the growth of plants ; the chief of these are carbon, hydrogen, and oxygen, therefore all animal and vegetable substances are excellent manures. It would evidently be of great benefit, if every plant could be manured with the decaying parts of its own species ; the ancients made this a particular object in some parts of their agriculture. We read that those vines were the most fruitful, which were manured with their own leaves and prunings and the skins of expressed grapes. (*Crescentius Agric.* § 2. c. 6.) This rule might be so far followed, as that the stems of potatoes, peas,

&c., could be dug respectively into the compartments where those crops are intended to be grown in the following year.

The following table shows the relative constitution of common stable manure and our usual crops:—

<i>Stable Manures.</i>	<i>Crops.</i>
Carbon, Hydrogen, Oxygen, Nitrogen, Carbonate of lime, Carbonate of soda, Benzoate of soda, Muriate of potash, Muriate of soda, Sulphate of soda, Sulphate of potash, Magnesia, Phosphate of lime, Oxide of iron, Alumina, Silica,	<div data-bbox="498 507 511 580">}</div> <div data-bbox="560 528 1010 559">These are chief components of all plants.</div> <div data-bbox="560 580 776 631">In some vegetables. In almost all plants.</div> <div data-bbox="560 673 837 725">In cucumbers, garlic, &amp;c. Perhaps in all plants.</div> <div data-bbox="560 745 942 849">In cucumbers, garlic, &amp;c. In all corn, and many other plants. Potatoes, onions, &amp;c. &amp;c. In most plants.</div> <div data-bbox="498 849 511 897">}</div> <div data-bbox="560 859 726 890">In most plants.</div>

Stable manure, and for the same reason every other manure composed of animal or vegetable remains, is evidently valuable to plants, by affording them such matters as they are composed of. But this is not the only reason that manures are beneficial; for in that case mere decayed parts of their own species should be the most fertilizing applications. There is no doubt that plants are essentially benefited by such applications; but why do potatoes, for example, grow more luxuriantly on ground manured with sprats, than on that manured with the dung of horses, and both these superior to the same crop grown on a plot manured with the decayed parts of its own species? Apparently, because the manures mentioned decompose with a rapidity exactly proportioned to the order or benefit. Sprats decompose, and their parts become soluble and capable of intossusception, first and most rapidly; then the dung of animals; lastly, the vegetable remains. All the less solid animal matters decompose with greater rapidity than vegetable matters: hence the dung of such animals as are carnivorous is the most prompt in benefiting vegetation; witness night soil, pig's dung, &c; but such manures are not the most permanent. Hassenfratz manured two portions of the same soil, No. 1. with a mixture of dung and straw highly putrefied; No. 2. with a similar mixture, newly made. He observed that during the first year the plants in No. 1. produced the best crop, but the second year (no more dung being added) No. 2. produced the best crop; the result was the same the third year, after which both seemed alike exhausted. (*Ann. de Chimie*, xiv. 57.) The same chemist found that a soil manured with wood shavings did not, during the two succeeding years,



produce a superior vegetation than the same soil without any manure ; the third year, however, it was better, nor was it until the fifth year that it reached the maximum of fertility. The site of a wood-stack and the newly cleared lands of America are eminently fertile, from the gradually decomposing vegetable remains they contain.

These facts and observations teach us that the most prompt manures are the reverse of being economical : vegetable remains, incorporated with a soil, will insure an average produce during several years ; animal matters and dungs highly putrescent are powerfully but transiently beneficial. Putrefaction is evidently the means of rendering these substances available to plants ; hence thoroughly decayed stable manure is usually employed by gardeners, as being of immediate benefit, admitting of clean husbandry, and as economy is not in private establishments the general presiding genius of the gardens. If stable dung or other manure is allowed to putrefy in an unenclosed heap, the loss is immense ; all the gases which pass off during decomposition, all the soluble matters which drain away, are highly nutritious to plants, as has been proved by Davy and others. If the decomposition is thus allowed to proceed, until the heap becomes a saponaceous mass, the loss cannot be less than 50 per cent. Notwithstanding all the reasoning of chemists, however, putrefied dung will continue to be used ; it admits of clean workmanship, with less labour, and insures a good immediate crop : to prevent loss as much as possible, therefore, the dung-heap should be in a brick cistern, and covered over with earth at least 9 in. deep, with a well at one corner to retain the drainage, which, from time to time, should be returned over the heap.

The chief component of plants is carbon, and we shall not be far wrong if we estimate it as constituting 50 per cent. of every vegetable ; it is the decayed organic remains of the soil which supply a considerable proportion of this to the growing plants. It is a subject of debate among chemists, how the carbon of manures is imbibed by plants. Carbon, say they, is insoluble, and experiment has demonstrated that the roots cannot absorb it in a solid state. Sennebier, having observed that water impregnated with carbonic acid, when applied to the roots of plants, was beneficial, concluded that the carbon of manures is converted into carbonic acid, and is in that state imbibed by them. (*Phys. Vég.*, v. iii. p. 55.)

Thompson, in an early edition of his *System of Chemistry*, gave a still more elaborate theory, which, being in subsequent editions omitted, we have no necessity to demonstrate absurd. I consider that the facts of which we are in possession, if progressively estimated, place the subject in a very clear light. Saussure found that a soil deprived of its soluble matters, by repeated decoctions with water, would not support vegetation so

well as that portion of the same soil not so deprived of its soluble constituents. (*Recherch. sur la Vég.*, cv. § ii. p. 170.) The extract thus obtained was evidently composed of saccharine matter, mucilage, extractive principle, &c. These, we know, are nutritive to plants, and are elaborated and assimilated by them after intromission. Now, vegetable substances, as straw, &c., gradually yield these soluble matters as they decay. Straw, wood, leaves, &c., consist chiefly of woody fibres; to convert this into saccharine and mucilaginous matters is the work of putrefaction; to effect this, oxygen must be absorbed, and the extra proportions of carbon be got rid of, as is evident from the following table of constituents.

	<i>Woody Fibre.</i>	<i>Gum.</i>	<i>Sugar.</i>
Carbon - -	52.53	42.23	27.5
Oxygen - -	41.78	50.84	64.7
Hydrogen - -	5.69	6.93	7.8
	<hr/> 100.00 <hr/>	<hr/> 100.00 <hr/>	<hr/> 100.0 <hr/>

That such processes actually do occur, Saussure has demonstrated by experiment: he found that moist wood, exposed to the air, absorbed oxygen, evolved carbonic acid, and water was evidently decomposed. Thus, then, putrefaction seems to render organic matters fit for the nourishment of plants, by converting them into saccharine and mucilaginous compounds, capable of solution in water. Hence the phenomenon of wood, which is slow of decomposition, being a permanent manure; animal matters, which rapidly putrefy, being transient, though temporarily powerful: hence the economy of using partially decomposed composts is also rationalised; when completely decomposed, its soluble matter, being more than can be consumed at the time by the crop, pass away with the drainage water, much is lost in the state of gas, and all that is left are a few earthy, saline, and carbonaceous particles, of comparatively little value.

Of the less general manures, which benefit plants by entering into their composition, a few words will suffice. Sulphate of lime (gypsum) is a component of clover, lucerne, turnips, &c: hence it has been applied, with benefit for these crops, to such soils as did not already contain it. Bones, broken small, have lately become a very general manure; their benefit, which is very permanent, is easily accounted for. The bones of oxen contain about 50 per cent. of gelatine, which is soluble in water, and rapidly becomes putrescent; the remainder is chiefly phosphate and carbonate of lime, salts, which are components of wheat, rye, barley, oats, peas, beans, vines, cucumbers, potatoes, garlic, onions, truffles, &c. Common salt, also, is employed as a manure, and is beneficial, partly in consequence of entering

into the constitution of plants. I shall next proceed to consider manures as being beneficial to vegetation, by absorbing and retaining moisture from the atmosphere.

(To be continued.)

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ART. II.—*Observations on the Silk Worm; by W. B. BUCHANAN.*

[FROM THE AMERICAN FARMER.]

(Continued from page 45.)

4th Age.—The treatment during this period, differs very little from the last. The insects will increase rapidly in size and appetite, and must be managed accordingly, dividing them on fresh sheets and augmenting the supply of leaves, which may now be given in larger cuts. They should have four regular meals per day. One very early in the morning, the second about ten, third at three, and the last late in the evening, and it is often necessary to throw them a few leaves in the intervals, especially if they shew signs of hunger by restlessness, and by lifting their heads when approached. The chief art in the management of silk worms, is, in adapting their food to their wants, and this can only be acquired by observation. If they have too little, it retards their growth and operations; if too much, it oppresses them, and adds to the trouble of attending them, by the accumulation of dried leaves remaining unconsumed, which also contribute very much to corrupt the air of the apartment.

It will now be time to put up the second shelf, about two feet above the first, and to remove to it some of the worms, if they appear crowded. If not, it will be ready to receive them after they recover from their fourth and last *mue*, which takes place about the fifth or sixth day.

I repeat, that the time of these *mues* is very uncertain, and have not, therefore, pretended to fix the exact periods of their occurrence or termination. They cannot, however, be mistaken. The worm first refuses food; remains for some hours quite inactive; is then observed to be agitated, to cast its skin, and shortly after to resume its functions. Nature seems to have made this little insect the subject of her ingenuity, and to have contrived these *mues* to augment the display of it. She has given it a covering, which, at first, hangs loosely about it, but

which soon becomes too small to contain its bulk, rapidly increased by its voraciousness: with an instinct nearly allied to reason, it abstains for a time from food, that its body may be sufficiently attenuated to pass through the rings into which its skin is divided; then casting forth some glutinous matter, which binds it by one extremity to the surface on which it is placed, it struggles forth at the other, leaving its incumbrance behind, and prepared to run another career of gluttony.

5th Age.—This is the important period in the management of the silk worm, and should have unremitted attention. It has now become valuable, on account of the time and labour bestowed on it, and as it is about to afford the harvest, it should be diligently looked to.

The temperature may now be reduced to about 70° Far. (too much heat having the effect of rendering the worms indolent,) the space increased, and the food given in entire leaves, or merely torn in two. It is said they consume two hundred times the quantity that served them in their first age, and a good stock must, therefore, be brought in at every gathering. In removing them, it is well to keep such as are backward in their recovery, distinct, as they will be later in climbing, and require food longer than the rest.

The decayed leaves should be carefully picked off two or three times a day, and the worms shifted once or twice before they begin to evince a commencement of their labours, which will be in eight or ten days from the *mue*. The last changing should, if possible, take place just before they begin to climb, and the fumigation used at the same time, and as often before as the state of the atmosphere in the room seems to require it.

It will not be difficult to discover when the insects have arrived at maturity. It may be known by many indications. By their crawling over the fresh leaves without nibbling them, and raising their heads as if they had other wants. They become almost transparent, especially on the back, and their necks are shrivelled or wrinkled. Their bodies have a pulp-like appearance, and become shorter and thicker. They are also more disposed to roam than hitherto, and begin to leave silky traces on the papers as they pass over them.

It will now be necessary to afford them the means of forming their cocoons, which may be done, by cutting from the young chesnut trees the extremities of their branches, which are well supplied with leaves, and sticking them in holes bored in the bottom of the upper shelf, so that they may extend down to the lower one, and a few of the leaves rest thereon, that the worms may reach them and climb conveniently. The upper shelf may be provided for, by stretching a line over it, to which the boughs may be suspended and allowed to hang down in the same manner. These boughs must not be placed too thick at first, lest



they interfere with the insects that are not yet disposed to mount, and prevent them from finding their food, which must still be furnished them, diminishing the quantity in proportion to their numbers. The shelves should be frequently visited at this period, and boughs continually suspended over such places as require them. If a straggler be found remote from the branches, it may be gently lifted and laid near them, and when any of these appear crowded, they may be removed, with the worms on them, and suspended in some other part of the room, supplying their places with fresh ones. In this manner the insects are not oppressed, and the air can better circulate among them, which it should be permitted to do freely, so soon as they have enveloped themselves in their cocoons.

A few worms may require to be fed for some days after the rest have completed their cocoons, and others will never form any; but this is unavoidable.

Three days and a half are required to complete the cocoons, and on the sixth or seventh they may be detached from the leaves, beginning with the boughs first furnished, which are likely to contain the most perfect. When it is meant to reel them, and this cannot be done immediately, it is necessary to throw them into boiling water, or to bake them in an oven, to destroy the insect, which would otherwise pierce them, when it is transformed into a moth, and spoil them for this purpose.

If it be desired to obtain a stock of eggs, the cocoons, after having been stripped of the loose silk or bur that surrounds them, should be laid on one of the shelves that the worms occupied, selecting as the best, those cocoons of a middle size, of a light straw colour, and which appear hard and of fine texture. The room should be so much darkened, that objects can hardly be discerned across it. In the course of fourteen or eighteen days, or sooner if the weather be warm, the end of the cocoon will become moist, and the butterfly, into which the insect is metamorphosed, will make its appearance. The males may easily be distinguished from the females, as they are much smaller and more active. An equal number of each should be placed together on sheets of paper, and laid on the unoccupied shelf, there to remain for a few hours, when the male may be removed, and the female left to deposit her eggs, which she will soon do on a small spot of the paper. The eggs will at first be of a yellow colour, but will become of a dark hue in the course of two or three days. The papers should be carefully rolled together, and wrapped round with a piece of cloth, to keep them dry, and placed in a cool cellar, to remain until they are wanted for the ensuing season. I am not prepared to say, whether any advantage would be derived from attempting two crops in the same season, which the length of our summers and the property of the

mulberry to produce its leaves, would enable us to do. Circumstances prevented us from making the experiment last summer; but an acquaintance who tried it, tells me the cocoons were very small. It is probable, the excessive heat may be prejudicial to the insects. I will, however, make the attempt this season, and advise those who have the facilities, to do the same.

To obtain the silk from the cocoons, requires a reel of a particular construction, and as the produce of the number of worms that will be attended by any individual this year, will probably be but small, it will be better to let them come to perfection, that a stock of eggs may be provided for another season.

For the gratification of curiosity, and to show that this operation is not attended with great difficulty, a few skeins may be run off, by means of the ordinary winding apparatus used in family manufacture. Having first stripped the cocoons of the bur, they are to be thrown into a vessel of hot water, the proper temperature of which is to be found by experience. If too great, it will render the thread brittle; if not warm enough to dissolve the gummy matter which abounds in it, it will come off with difficulty. A few degrees below the boiling point will be most suitable, and when this is attained, the balls are to be stirred round with a small whisp, or the feathered end of a quill, until the threads attach to it; lifting these, and drawing them a few times with the hands, the balls remaining on the water until they run well, they may be made fast to the reel and wound off without trouble, if only two or three cocoons are united to form the thread. This will be sufficient to ascertain the quality of the silk, though for the purposes of the manufacturer, so small a thread would hardly answer. In this state, when properly and carefully reeled, it is worth four to five dollars per pound, and the bur or loose silk, that which is thrown aside in reeling, as well as the pierced cocoons, will all be valuable.

A reel with the art of using it, will be indispensable in every establishment, where the production of silk is undertaken. This machine, which is not costly, and for which I can at any time furnish a model, is the only item of expense necessary in the business. The egg may easily be procured: there is scarcely a farm that has not many fine mulberry trees upon it, or some vacant field or fence row, where they might be planted: scarcely a dwelling that has not some spare corner, or a family where there are not unemployed females and children, whose services might thus be rendered productive, and who, in this light and interesting occupation, would meet a better reward for their industry in two months, than the various small objects on which they now bestow it, would obtain for them in twelve. They will find it a pursuit, uniting amusement with the prospect of gain, and particularly adapted to those situations of life, where capital is scarce and employment uncertain.

The success which has rewarded our enterprise in many of the useful arts, so long considered as peculiar to European ingenuity, encourages me to believe, that this important branch may be advantageously undertaken—prompted to it, as we are, by the suitableness of our climate, the luxuriance of our foliage, and the increasing necessities of our population.

W. B. BUCHANAN.

Warren, March, 1828.

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ART. III.—*On the Properties and Application of Manures, &c.*

[FROM LORAIN'S HUSBANDRY.]

The fruitless attempts to make farm-yard manure a more proper food for plants, has been a perpetual source of extensive waste and much injurious and expensive labour.

The gentlemen who have attempted to point out the food on which plants live, differ so widely, that it is impossible to believe they understood the subject. It is evident, however, that where decaying animal and vegetable matters abound, vegetation also abounds; and where the soil is deficient in these substances, it languishes and becomes unproductive.—Therefore, it seems evident that these substances afford the proper food for plants; and that nature understands the preparing of them, appears to be proved by the luxuriant vegetation which generally prevails where art has not interfered with her simple but perfect system of management.

Plants seem to subsist on the same food as man, and many of them appear to be equally carnivorous, as they thrive much better where animal matter abounds. Still nature, intent on promoting animal and vegetable life to the utmost extent, has wisely ordered that man and animals in general should loathe and reject decaying animal and vegetable substances, and that plants should live on putrescent matters, in all the various forms it has been destined to assume.

But as it was necessary to spread the larger masses of these substances over the surface of the earth, some of the larger animals, and numerous tribes of animalculæ, were calculated to live voluptuously on them, and to spread this matter over the ground. Thus we see, when the larger animals die, that in common certain quadrupeds or birds soon devour them, and spread the nutritious matter over the soil; or when this does not happen, innumerable animalculæ are generated so soon as the state of the atmosphere favours fermentation. These

riot on the carcass until nothing but the bones remain. They then take wing, and carry with them the injurious excess of matter, and eventually spread it with compound interest where it will be useful. Even the gaseous effluvia arising from the fermentation of the decaying animal, appears to be as profitably applied by nature as any other part of it. In fact, nothing seems to be lost by her. What appears to be a waste in one part of her extensive domain, is valuably applied in some other part of it.

Notwithstanding nature is careful to gather and apply the animal and vegetable matters, that the inconsiderate farmer suffers to be exhaled by the sun, scattered by the winds, and washed away by the rain and melting snows, he should recollect that a great loss is sustained by him, especially if he be in the habit of endeavouring to make the scanty remains of his dung a better food for plants.

Our eyes and nose, without the aid of chemistry, are sufficient to inform us that farm-yard manure loses one half if it be kept twelve months, and in proportion if it be kept a shorter time, while the season favours decomposition; yet it appears, that philosophers and farmers have long been puzzling themselves and the world with the great advantages to be derived from laboriously formed compounds. They, however, and the world, might have long since seen, that they have generally differed so widely in the nutritive principles said to be produced by these combinations, that the result of their experiments have been better calculated to bewilder than to instruct; especially as they have recommended septic substances to be mixed with farm-yard and other putrescent manures, while they applied these substances to destroy the putrid matters arising in privies and elsewhere; and might have seen, that the value of putrescent manures consists in applying them in that way which is best calculated to save all their putrid particles, to be diffused throughout the soil.

It is true, some gentlemen have condemned the practice of mixing quicklime with putrescent manures, and have, in the place of it, recommended effete lime; supposing that this mixture introduced certain principles which greatly enhanced the value of the compound.

Lime, however, even in this milder state, promotes decomposition, and is very injurious to the best properties of the manure. Therefore, these unnatural and laborious mixtures should be avoided; at least, until the gentlemen who have recommended them can agree among themselves in what the valuable properties of their expensive compounds consist.

Some philosophers and farmers say, that important advantages are to be derived from mixing rich mould with farm-yard manure. It is evident, however, that uniting these sub-



stances, does not augment them, and that the united mass is but the value of the articles separately. As it is generally believed, that unless the compost be frequently turned and well incorporated, by much labour and expense, it is not properly prepared; by these means much of the riches of the dung escape.

If rich soil be considered necessary to eke out the dung, it should be hauled either before or after it, and spread under or over it; or each spread on separate parts of the field. The latter would be the better practice, as it would determine the comparative value of each.

I have hauled and spread much mould; but the improvement has very generally fallen far short of remunerating the expense. This will always occur, unless the earth be highly impregnated with animal or vegetable matter. It is these substances contained in it, and not the earth, (of which it is commonly principally composed,) that enrich the ground.

If it could be admitted, that the mixing of dung and soil together creates other valuable substances, and greatly enhances the value of the compound, certainly the same effects would be produced, with but very little comparative labour, by turning the farm-yard manure under the soil. The substances in either case are the same, except that a richer soil is generally provided for the compost; but this is purchased with great labour and expense, and but too often by the impoverishing the woodlands, or some other part of the farm. A full grown crop of the grasses or weeds, grown on the grounds and turned under with the dung, would very generally furnish much more nutriment for plants than the mould without any additional labour. The dung being evenly spread over, and closely covered within the soil, at a depth greatly favouring fermentation, will be gradually and most effectually decomposed, and spread its riches through it with the least possible loss; and the supposed creation of other valuable principles would more abundantly take place, especially if the dung be turned under previously to the too general loss sustained by decomposition.

Nature cannot be deficient in the process of fermentation and decomposition, as on these the existence of all animated nature especially depends. That she is not deficient, may be clearly seen by only observing the rapid decay of a post near the surface of the soil. We may also see, that she knows how to concentrate her most powerful efforts where they are best calculated to promote an important end, as the decay of the post above and below this interesting point is very slow indeed. This simple post also shows that too many are very deficient in observation, or they would not have con-

sidered nature as incapable of promoting the most obvious and useful operations committed to her care.

This, however, as well as many other things, is best seen in our forests, where she alone presides. There vegetation is much more luxuriant than it is to be found where man is perpetually opposing her perfect economy, by some inconsiderate practice, originating either in barbarism, or philosophical theories misunderstood or improperly applied.

Nothing can be more effectually accomplished than is the gradual decomposition of animal and vegetable substances in the great laboratory of nature. She may, for aught we know to the contrary, very advantageously employ, in this process, causes that are unknown, or not yet well understood by us. We may all see, however, that where a favourable proportion of moisture, heat, and air exists, the fermentation and decomposition of animal and vegetable matters certainly follow.— This process is generally more or less rapid, as the substances may happen to be more or less solid. Still, any of the substances commonly used for litter will be decomposed with sufficient despatch, provided they be well saturated with the rich juices of the cattle-yard, and a proper system of cultivation be pursued.

If, however, the folly or cupidity of man has exhausted the animal or vegetable matters contained in the soil, nature does not alter her usual course to meet his wishes, by a hasty and unnatural decomposition of the remainder; but art can compel the speedy application of those scanty remains, by the use of stimulating manures.

When a due proportion of the vegetation excited by these means is judiciously returned to the soil, it is vastly more speedily restored to its original fertility, than could have been effected by the joint efforts of nature and art in any other way known to us, except by the introduction of extraneous enriching manures.

It should, however, be recollected, that the nutriment arising from this hasty decomposition is in this case profitably applied; and that in attempting to make farm-yard manure a better food for plants, by the different modes that have hitherto been pursued, a very considerable proportion of its best nutritive properties is destroyed before it is used.

Some writers say, when fresh dung is applied to plants, that fermentation is not excited, and that it becomes a dryish wisp, incapable of affording nutriment for plants; others say, fresh or hot dung (as they term it) injures vegetation by an excess of heat. Both cannot be right, as they are directly opposed to each other.

I have been in the practice of planting Indian corn on grass lays, or corn mixed with other plants, and of cutting off the

corn by the roots in the fall, and seeding the ground with wheat.

My cattle-yard and stalls were profusely littered with corn-stalks, straw, leaves, &c.; of consequence, the manure for my corn crops consisted principally of these substances. They were ploughed under the soil early in the spring, but not without some difficulty, as it required the active exertions of a boy with a forked stick, to clear the head of the plough.—Still when the grounds were cultivated for the wheat, those substances were so far decomposed, that but little, if any, traces of their original form appeared, even when my grounds were ploughed previously to the sowing of the wheat.

This practice has not been confined to soil or climate. The result has been the same in loams, stiff retentive clay, and on light sandy soil; likewise in the climate where I now reside, which is much cooler throughout the summer, and much moister than where I formerly lived.

Dung well stored with litter is a good non-conductor of heat; it therefore greatly retards evaporation from the ground underneath it. It also absorbs much moisture; and while the ground above it is drier than that underneath, the moisture is continually absorbed from the earth below, and diffused through the soil above. Thus, in any soil or climate, the ground is much moister during a dry time, where dung well stored with litter is used, than where decomposed dung has been applied; provided the cultivation be calculated to suffer the dung to remain undisturbed, and closely covered within the soil.

The destructive use of septic substances has been practised in every possible way. Great masses of mould were formerly incorporated by manual labour with lime, by frequently turning and mixing the contents. However, a considerable saving of labour has since been effected, by incorporating the lime with the mould by frequent ploughing and harrowing the mass; especially when the soil accumulated on the headlands is used for this purpose.

But as it is believed, in either practice, that the compost is not properly prepared, unless time is given between the mixings for the creation of certain enriching principles that are supposed to be formed during the process, the animal and vegetable matters contained in the mould are very extensively destroyed by decomposition. The exposure to the air, sun, rains, &c. during the process, greatly favours the escape of gaseous effluvia arising therefrom. Were it not that the lime contained in the compost acts powerfully on the soil to which this compound is applied, much less benefit would arise from the application of it.

If such expensive mixtures are made, they should be applied immediately after they have been incorporated; or it

would be a far better practice to haul and spread the mould first, and after the lime had been spread over it, to incorporate the whole by the tined harrow, with the surface of the cultivated soil underneath it. This would be done with much less labour, and the improvement would be equally great. In either case, but little or perhaps nothing is lost by the hasty decomposition of the animal and vegetable matters, as it is applied to the growth of the crops. Still, it should be remembered, that where there is animal and vegetable matter enough to promote a sufficient decomposition for the luxuriant growth of the first crop, that the hasty and unnatural decomposition of the overplus not only wastes, but also renders it far less useful to the round of crops, and the grasses following.

The soil will be less expanded, and the plants less excited, by the more feeble fermentation that will naturally arise after this useless decomposition of too much of the animal and vegetable matters has been effected.

In common, however, a full grown crop of the grasses or weeds, grown on the soil and ploughed under it, with the application of the lime alone, incorporated by the tined harrow, with the surface of the sod, after it has been reversed and properly prepared, will provide more nutriment for plants, than the lime and mould applied in any way; and will also save the very expensive labour of digging, hauling, and spreading the mould.

But so infatuated are many with laboriously compounded ingredients, or the quackery of farming, (namely, injudicious, expensive, and but too often destructive compounds,) that they tell us the mixing of lime with sand forms a very valuable compost for grass grounds. It is evident however, that inert sand furnishes no matters on which the lime can act profitably. The only advantage which can be derived from this labour is, that time, with the turning and mixing, cause the lime to become less caustic; and this may be equally as well obtained by suffering it to remain unapplied, until time alone has effected the same purpose.

By top dressing, much of the best properties of the putrescent manures are exhaled or wasted in the way that has been described; if to this be added the too general loss sustained by decomposition before the manure is applied, it will be found that but little good can be done by a great deal of it, when used in this way.

If dung be used for top dressing, it should be applied soon after the first crop of grass has been mown, and before the manure has suffered any material loss by fermentation. The grasses should be suffered to grow until they form a close shade; after this, they may be pastured, provided a good covering of them be preserved. This will prevent much exhalation;



it will also keep the soil much more open to receive the juices of the manure. As water does not pass off so freely through a close pile of grass, much of the coarser particles of the washings from the manure will be arrested in their progress through it, and much more of the juices from the dung will sink into the soil. The close covering also greatly favours the decomposition of the litter, and by keeping it flexible, causes it to sink further into the soil, and lie much closer to it; therefore but little if any of it will be found in the way of mowing the ensuing crop of grass, or of making it into hay, provided the manure be very evenly spread over the ground. But as the want of the second crop for hay and other circumstances, may readily prevent the cultivator from hauling the dung at the proper time, he may haul and spread it any time before frost sets in; but not with the same advantage. Still, if care be taken in raking up the hay of the ensuing crop, but little of the litter will appear among it.

Top dressing, however, with putrescent manures, is, under the most favourable circumstances, a very wasteful practice, and should be avoided where population is sufficient to admit the practice of convertible husbandry; except by those who prefer the ease obtained by grazing exclusively, to a more active and much more profitable mode of management.

When ashes, gypsum, lime, &c. are applied to the grass grounds, it must be by top dressing. But either of these substances is more extensively useful to cultivated crops, when they are properly incorporated with the soil.

It is difficult to calculate the losses arising from the prevailing practices of gathering, preparing, and using the manure that might be obtained from the general resources of a farm. Some manage better, and others worse. Neither weight nor measure to ascertain these losses, can be referred to. We may, however, form a tolerable estimate of their amount, by summing up the supposed losses arising from each improper practice, and, as well as it may be done, averaging the losses. This must centre between the best and worst practices in general use. I have done this, and believe the loss cannot be less than seven-eighths of the whole, which might be very readily saved by good management and a proper cultivation.

Whether farmers consider it too troublesome to drive their cattle to and from water during the season for feeding them on dry fodder, or erroneously suppose they are benefited by the exercise of strolling about the lanes and highways, or are governed by custom, and pay no attention to the subject, is unknown to me. Such is, however, the too general practice; and if the days were as long as the nights, and the cattle turned out early, a great many farmers would lose half their manure by this inconsiderate practice alone.

*(To be continued.)*

### PART III.

#### MISCELLANEOUS AGRICULTURAL ITEMS.

[COMMUNICATED FOR THE SOUTHERN AGRICULTURIST.]

##### *Farmers' Society of Barnwell District.*

At the last annual meeting of this Society, it was resolved that the following Premiums should be awarded in January, 1830, viz :—

1. For the best crop of Indian Corn, raised on not less than ten acres of Upland, \$20.
2. For the best crop of Indian Corn, raised on not less than five acres of Pond Land, \$20.
3. For the best crop of Indian Corn, raised on not less than two acres of Swamp Land, \$10.
4. For the best acre of Hay, \$10; and a specimen not less than twenty weight must be exhibited at the meeting of the Society, accompanied by a certificate from one neighbour who is respectable, stating the quality of the whole, is equal to that of the specimen exhibited. In this a preference will be given to Crow-foot Grass.
5. For the best Ram and Ewe, age from two to six years, \$10.
6. For the best ten yards of Homespun Cloth, the filling being Wool, \$5.
7. For the best ten yards of Homespun Cloth, all Cotton, \$5.
8. For the best pair of Mules, bred by the owner, \$20.
9. For the best Mule, not less than two years old, raised by the owner, \$10.
10. For the best Stallion, bred by the owner, and not less than two, nor more than five years old, \$10.
11. For the best Brood Mare, bred by the owner, and not more than seven years old, \$10; and satisfactory proof of the pedigree of the two last mentioned animals, will be required.
12. For the best pair of Shoes, made in Barnwell district, \$2.
13. For the best side of Leather, tanned in Barnwell district, \$3.
14. For the greatest quantity of Rice from two acres, \$10.
15. For the greatest quantity of Wheat from two acres, \$10.
16. For the greatest quantity of Root or Slip Potatoes from one acre, \$10.
17. For the best sample of Sugar Cane, not less than twenty stalks, \$5.

18. For the best Sugar from Cane grown in Barnwell district, in quantity not less than five pounds, \$5.

19. For the best five yards of Homespun Cloth, all Wool, \$5. For this premium, persons other than members may be candidates.

At the same meeting, the following letter and certificate were presented:—

*To the Members of the Farmers' Society,  
of Barnwell District.*

GENTLEMEN,

I take the liberty of stating to you the mode of culture, and the produce of two half acres, (105 feet by 210 each) which were planted with Yam Potatoes, about the 8th of March, 1828. One half acre was planted with the Potatoes cut into small pieces, and placed at the distance of two or three inches on the trench; while the other half-acre was planted with the largest Slip Potatoes not cut, and placed at the distance of three or four inches. All the seed used for the acre was from the Yam kind. The beds were five feet apart; and both half-acres were well hoed five or six times. No vines were cut from either half-acre. The season was unusually dry, and the Potatoe crop was much inferior to that of the last year. The half-acres were dug on the 30th of October: the cut Potatoes produced eighty-four bushels, and six quarts—the whole Potatoes produced eighty-three bushels three pecks and three quarts. Thus the difference between them was eleven quarts. In conclusion, I would remark that by cutting the Potatoes into small pieces, a less quantity of seed will prove sufficient for a certain quantity of land, nor will a failure of the crop result; on the other hand, the Potatoes, when planted without cutting, produced vines for the slips much earlier and more abundant. The Potatoes from each half-acre were unusually sound and fine, as will appear from the certificate of Wm. R. Bull, Esq. With these,

I remain yours' respectfully,

JOHN S. BELLINGER.

N. B.—It may be added, that the two half acres had been planted with Potatoes the year previous.

CERTIFICATE.

<i>Barnwell District,</i>	}	I do hereby certify that at the request of Dr. JOHN S. BELLINGER, I assisted him on Thursday, October 30th, 1828, in measuring the product of two half-acres, planted with Root Potatoes, of the Yam kind. One half-acre was planted with cut seed, the other as usual. The first produced eighty-four bushels and six quarts; the second produced eighty-three bushels, three pecks and three
<i>South-Carolina.</i>		

quarts. The first produced thirty-three barrels and two-thirds of a barrel; the second produced thirty-three barrels, one-third of a barrel, and half a bushel; each barrel's contents being two heaped bushels and a half of Potatoes. In addition, the Potatoes in general were very large, and uncommonly fine and sound.

WM. R. BULL.

February, 17, 1829.

*To Rice Planters and Rice Millers.*—The subscriber has been informed, that a spirit resembling Whiskey can be distilled from the common Rice-flour. His informant is Mr. Latham, distiller, Hasell-street; who saw the fact ascertained by his brother during the revolutionary war. Mr. Latham is now upwards of eighty years of age, and as it is nearly half a century since the experiment was tried, he cannot speak positively as to the result, but the impression on his mind is, that a bushel of flour will produce a gallon of spirit! Is this the Arrack of the East?

JAMES GREGORIE,

Chairman of the Com. on Foreign Rice Mills, of the Ag. So. of So. Ga.

[*By the Editor.*—We place upon record this further proof of the salubrity of Charleston. Mr. Latham, at his advanced age, stated to us that he can do as good a day's work as ever. He regularly gets up at three o'clock, lights his fire, sets his still at work, and has his Rum ready to be drawn off by the time his assistant comes.—J. G.]

*Prospectus of the Fecula of the Sweet Potatoe.*—This most useful discovery has taken place in Malaga, the only part of this hemisphere where that admirable production of the earth, characterized by Linnæus, *Convolvulus Batata*, class 5, order 3, of the convolvulus family, is to be found; and has been rewarded by his Catholic majesty with a patent of invention. This fecula, extracted without fermentation or putrefaction, and for that reason wholly free from acidity, has been scrupulously analyzed by some of the most able professors in pharmacy, commissioned for that purpose, who have unanimously pronounced it superior to sago, tapioca, or any farinaceous substance hitherto discovered, without excepting the celebrated plant, known by the name of *Galanga Arundinacea*, or arrow root, from the extreme whiteness, suavity, and fineness of the molecula which compose it, (visible only by the help of the microscope,) from its most digestible and nutrimental qualities, and, finally, from being combined with the saccharine matter, of which every other species of fecula is totally void.



Thirty-five of the principal physicians and surgeons of Malaga, including the director and professors of the Royal College, and the physician-general of the army, Dr. Andrew Vila, have attested, authentically, its sovereign efficacy in nervous debilities; in the febrile tabes, or consumption, and in the convalescent state: and as a medicine in diarrhœa, dysenteries, and all disorders proceeding from irritation in the stomach and intestinal canal. It has since been seen, with admiration, to cure, in a few days, the most inveterate gonorrhœas; the fluor albus, or whites, and excess in the menses; and has been found of admirable use as nourishment for children during lactation, substituted for the food called pap, which frequently is attended with such bad effects.

The use of this excellent article, is not to be limited solely to the sick; the delicacy of its substance (attested by the most celebrated cooks and confectioners in Spain,) rendering it of incomparable utility in pastry, fritters, &c; and in custards, blanch-mange, and biscuits, particularly those termed in Spanish *Borrachuelos*, which, composed of fecula, are absolutely inimitable by the finest flour of wheat.

The most common method of using it as a medicine, or as food, is as follows:—

For milk porridge, "*natilla*," take a quarter of a pound of fecula, and dissolve it in a sufficient quantity of cold milk, (that of almonds is preferable, in case of sickness,) the lumps must be well mashed; and with the addition of two quarts of milk, put before a slow fire, stirred in one direction till sufficiently boiled, introducing sugar and cinnamon afterwards, as the disease may permit. As a cooling medicine, it is generally used in its crude state, either as a clyster, or as orgeat, with water and sugar, particularly in cases of gonorrhœa, and all kinds of fluxes.

In using the fecula for pastry, fritters, &c. it is necessary to observe, that in consequence of the fineness of its molecula, on coming in contact with liquids, it thickens and increases very considerably. The proportion in which it is to be used, relative to flour, is that of ten and a half ounces, where a pound of the latter would be required. Finally, mixed with one-third part of flour, or in equal quantities, it produces bread unequalled in point of wholesomeness and delicacy.

#### CERTIFICATES.

I, Don Rafael Briz, doctor in pharmacy, hereby certify, that having been commissioned by his Excellency, the governor of this city, to analyze the fecula of the sweet potatoe, invented and extracted by Don R. Mackinnon, after a most scrupulous examination and repeated trials of this delicate substance, I have found it to be beyond comparison superior to sago or tapioca, and worthy of every degree of encomium, for having demon-

strated itself, in the most eminent manner, from its rare and admirable properties, both physical and chemical, to be the most salutary, select, and pure, of all feculas or farinaceous substances hitherto discovered; which analytical task I delivered to the said authority, in my exposition of the subject.

(Signed,)

DON RAFAEL BRIZ.

Malaga, 4th November, 1827.

We, the undersigned, doctors in medicine and surgery, certify, that having seen the analysis and report of Don Rafael Briz, on the fecula of the sweet potatoe of Malaga, and carefully observed its admirable effects on a great number of convalescents, to whom we have applied it, sometimes as a cooling medicine, as an alimentary substance, and sometimes as a cathartic, we agree perfectly with his opinion with respect to it, and conceive that, besides its excellent effects in general, it would be singularly useful in bilious diseases, and cases of dysentery.

Malaga ut Supra.

(Signed by 33 Physicians.)

I, Don Andrew Vila, Physician-general of the Royal Armies, and of the military hospital of this city, inspector of epidemical complaints in New Castle, Fellow of the Royal College of practical medicine in the court, and one of his majesty's pensioners of merit, certify,

That the healthy state of the lower class, and children who use the boiled sweet potatoe as their principal nourishment, the suavity and tastefulness of the fecula, and the inalteration of its properties, by extraction, together with its total separation from the fibrous parts, which alone resist the digestive powers, stimulated me to undertake a course of trials, which I conceived might be useful to the health of the military men under my command, as well as the economy of the royal finances. The dysenteries, degenerated into a putrid and incurable character, which attack the garrisons on the coast of Africa, and whom the benignity of his majesty sends to Spain for their cure, were the first objects of my essays. The use of the fecula speedily calms the symptoms of that terrible disorder, and arrests the progress of the tabes, distinguishing itself, particularly for its admirable effects in diarrhœas, which it perfectly cured in a few days. If facts can warrant the fortunate results of sound practice, my observations in the military hospital under my care, convince me even to demonstration, that the fecula of the sweet potatoe, is of a distinguished use in nervous weakness, in febrile emaciation, and in the convalescent states; and as a medicine in diarrhœa, dysenteries, and every disorder proceeding from irritation in the stomach and intestinal canals. I sign this declaration in Malaga, this 8th of November, 1827.

(Signed.)

ANDREW VILA.

[Franklin Journal.]

*French Method of Transplanting.*—During dry weather, the gardeners of Paris do not wait for rain as ours generally do; but, as soon as their crops require removing, it is done in the following manner:—Having chosen the spot, they well water the top, and immediately dig it under, and afterwards water the fresh surface, and as soon as it is dry enough, it is raked, and the plants put in without any regard to the mid-day sun; they continue to water the bed three or four times a day, until the plants have taken root. It is surprising how soon lettuces, cabbages, &c. will be well rooted by such treatment, and with what vigor they grow after the first shower of rain. What would have been the state of such plants had they remained in the seed bed? They would have drawn each other; their first leaves would have dropped off, and general debility would have followed, not easy to be removed: but, by the French treatment, not a leaf will be lost. Now, if we consider the principle, it is simply this: that every plant placed in the sun in water will in no way flag, and the continued wet state of the bed for the first few days is similar to it; besides, the presence of the sun contributes powerfully to the rooting of the plants.—*Eng. pa.*

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*Scuppernong Vine and Grape.*—Extract of a letter from B. Blodget, Esq. to Dr. Saml. L. Mitchill, dated Raleigh, N. C. Jan. 6th, 1829.—“I have recently returned from Alabama, and have collected fifty-two sorts of grapes, the spontaneous growth of our United States. Among the collection, is the Scuppernong of Washington county, in North-Carolina. Captain Wm. Burlingham offered some of the wine to taste, that was fourteen years old. He has cultivated four acres for eighteen years, and thinks the wine superior to the best Madeira or Champaigne. The vine is so prolific, that a single plant has produced him one tun of fruit, and yielded him eight barrels of wine. I intend to introduce this species of vine. It received its name from the circumstance of being first discovered near a swamp of that denomination. I intend to send you a cask.”—*N. Y. Farmer.*

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*Manufacture of Salt.*—Mr. Loring Crocker, of Barnstable, is making improvements in the manufacture of salt from sea water. He is about to throw up a high dyke around two or three acres of salt marsh, upon which he will bring the sea water, which will evaporate considerably. The water then will be conveyed to a deep trench, and from thence to the wooden vats.—*Traveller.*

## QUERIES.

*Dear Sir,*—Will you inquire, through the medium of the *Agriculturist*, whether any substitute for Clover has ever been used in the Southern States with effect. I mean as an enricher of the soil. I occupy a poor piece of sandy land, and as I cannot manure the whole of it, in the usual way, and am not rich enough to purchase a better piece, I wish to ascertain what vegetable has ever been used among us, as a manure, turning it in whilst in a green state. I have heard much of the benefits arising from the turning in of green crops, but I know no one who has practised it. My object, therefore, is to ascertain, if it ever has been tried here, what vegetable was used, when sown, when turned under, and with what effect

I remain yours', &c.

GEO. G. HAYERS.

*Note.*—We do not know how far the practice of turning in green crops has been adopted among us, but in North-Carolina, the common Cow Pea is used with great success. In some future number, we will give some extracts from notes, which we made last summer, of conversations which we had with several intelligent gentlemen from that State. In the mean time we earnestly request such of our readers as have made experiments with green crops as manures, to forward to us the results, whether they have been favourable or otherwise.

J. D. L.

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CHARLESTON, 10th Feb. 1829.

*Mr. Editor,*—I will thank any of your correspondents to describe to me the mode of propagating the Tomatoes from *cuttings*, particularly. I am told they last out the season, if they take root, but I have hitherto failed from some misunderstanding of the right method.

Also, the method of planting out Tomatoes, Cabbages, &c. as practiced on *James Island*. I am told it is an infallible way to succeed with them, even in dry weather; and applies to other vegetables.

A. C. R.

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## LIST OF BOOKS.

*Farmers' Register and Monthly Magazine of Foreign and Domestic Events.* Glasgow, in 8 vo. Nos. Monthly. 1s.

*Meadows, Arthur, Esq.* Hints to the Farmers of the Baronies of Forth and Bargo, on the Cultivation of Marigold, Wurtzle, Beans, Carrots, and Parsneps. Wexford, 8vo.

*Anon.*—A Dissertation on the nature of Soils, and the Properties of Manures. To which is added, the Method of making a Universal Compost. —Edin. 8vo. p. 60.

*Anon.*—Practical instructions for the Formation and Culture of the Tree Rose. London, 12mo. pp. 91. wood cuts. 3s. 6d.

*Pomological Magazine.* In 8vo. Nos. Monthly. Four figures. 5s. coloured, 3s. 6d. plain. Edited by two Gentlemen intimately connected with the Horticultural Society.

*Martin, Alexandre.*—Manuel de l'Amateur de Melons, ou l'Art de reconnaître et d'Acheter de bons melons; précédé d'une Histoire de ce Fruit, avec un Traité sur la Culture et une Nomenclature de ses diverses Espèces et Variétés. Paris, 1 vol. 18mo. pp. 156—4 pls. 2 frs. 50c.

*Delpierre Leocade.*—Manuel du Fermier. Paris, 18 mo. pp. 272, 1 pl. 3 frs. 50c.

*Dutrochet, M. H.*—Agent immédiat du mouvement vital dévoilé dans sa Nature et dans son mode d'Action chez les Vegetaux et chez les Animaux. Paris, 8vo. pp. 226.